A GLIMPSE of How Agribusiness can Feed the World

An Acronym That Veterinations Can Use To Summarise The Factors Holding Back Farming

As part of the agricultural community, veterinarians are frequently asked to speak at meetings, write papers or even in casual interactions, explain if farming and farmers are ready to feed the world. Not just the world today, but the world of 2050 or 2100. Many of us struggle to move beyond platitudes such as "we managed it before, and I'm sure we can manage it again." But how do you actually answer the question and make it clear what is or might hold agriculture back? Agricultural productivity has improved by an average of two per cent per year over the past 50 years and, first suggested in 2012, the acronym GLIMPSE can be used to identify the factors, which if removed can allow it to maintain that progress. New research using big data analytics and reviewing 1.3 million websites has confirmed the GLIMPSE acronym as an effective way to communicate to governments, non-governmental organisations, charities, United Nations and consumers of the seven factors to remove from the path of agriculture to reach the goal of producing 70 per cent more food by 2050.

Food security is a concern to us all. The Food and Agriculture Organization of the United Nations (FAO) estimates that globally, nearly 800 million people are undernourished. There has been progress in past decades and the number affected is down 200 million since 1992, yet there is still much that could be done. Food security is not an issue that only affects developing nations. Its prevalence is seen in all regions of the world, including Europe.

The global population is expected to grow to more than nine billion people by 2050, and guaranteeing food for everyone is a challenge, to say the least. The FAO estimates that a 70 per cent increase in food production is necessary to account for the population surge that is expected to demand more meat, milk and eggs, particularly because of the growth of the middle class. How will agribusiness rise to this challenge without completely destroying the planet's resources? What are the barriers it faces?

For the first time perhaps in history, the biggest challenges facing the food chain involve not just productivity, but the environmental impact of production and the social impact of both production processes and the food itself. A few years ago, Alltech conducted research to determine what barriers agribusiness faces. Recently the research was repeated, this time more extensively. The result is "GLIMPSE," a framework encompassing Government, Losses, Infrastructure, Markets, People, Science and Innovation, and Environment. GLIMPSE is designed to help those involved in farming, food and agribusiness to understand the seven words that summarise the challenges that, if overcome, will allow us to meet this demand and help secure food for us all.

What 59 Global Experts had to Say

In interviews with agribusiness experts, they were asked the question: What are the biggest barriers facing agribusiness' ability to feed nine billion people? It was intended that this manner would solicit spontaneous responses and create a discussion. Interviewees represented 23 different countries and covered all areas of agribusiness, from industry leaders such as the former United States secretary of agriculture, to academic experts including professors from Harvard University, UC Davis, University of Perdue and UCD Michael Smurfit Graduate Business School. Also interviewed were various C-suite executives of numerous agribusinesses from countries such as Canada, Peru, India and China, and representatives from national associations such as the National Turkey Federation (US) and the American Society of Animal Science.

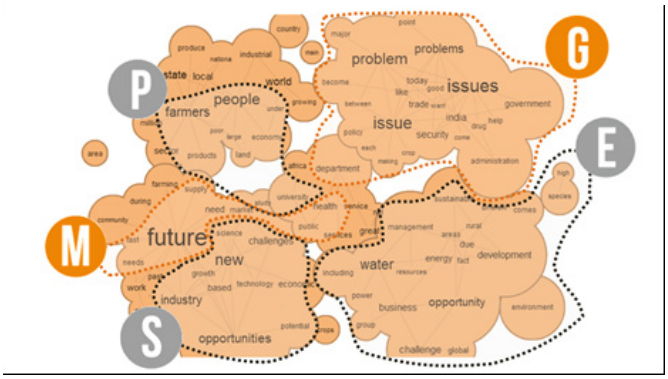
More than 200 specific answers were given, but it was possible to distill these down into 22 challenges, using a grounded theory approach.

Agribusiness Professionals Take the Quiz

The second stage of the project was a survey used to breakdown the list down further; the challenges were presented to 527 agribusiness professionals representing 53 different countries. The survey allowed for the opportunity to include any challenges perceived that were not listed, to make sure everyone's voice was heard and all alternative suggestions were given consideration. When analysing the data, it became very evident that responses fell within the established GLIMPSE categories.

Analysing the Content of 1.3 Million Websites

With the explosion in social media, a new type of technology became available that allowed this paper to look at a different type of analysis – that of the general public. In this way, it is a "top of the mind" analysis drawing impulsive conclusions from the general populace. With the review of over 1.3 million websites, it was interesting to see if public interpretation of these issues would parallel that of the industry experts. It did. In the word cluster analysis, the relationships of words that frequently appear together in posts are represented by interconnected bubbles. When observing these clusters, GLIMPSE categories can be clearly identified in several of them.



Word cluster

When breaking down the data into different periods within the three years of content, the new word clouds that arise show slight differences in trends or patterns across time. More words related to government and policies and science and innovation can be identified in the 2012-2013 word cloud, while relatively more words related to environment and consumer market categories are identified in the word cloud from 2014 to 2015.

Word clouds with GLIMPSE-related keywords removed.

The social media analysis supports the findings and conclusions obtained in the first two phases. Most of the categories under GLIMPSE are present in the posts the study identified. The only exception is regarding food losses. The issue was not found to be extensively associated with words or themes in posts containing the keywords. This may be attributed to low public awareness that the issue exists, or perhaps people see the challenge more as a consequence derived from other challenges than a challenge in and of itself.

Re-evaluating GLIMPSE

The original GLIMPSE was the most downloaded article of the *International Food and Agribusiness Management Review* (IFAMR) journal, so it was important to see if those identified factors were still relevant. As it turns out, they were.

G	L	I	M	P	S	E
Government	Losses in the food and ingredient supply chain	Infrastructure	Markets	Politics & Policies	Science & Innovation	Environment

Original GLIMPSE

The goal of GLIMPSE is to truly capture the concerns of the entire food and agribusiness industry and gain global insights. The adjusted framework includes the issue of human capital and merges the issues of government and policies, while maintaining the same acronym.

G	L	I	M	P	S	E
Government & Policies	Losses	Infrastructure & Investments	Markets: Consumers	People	Science & Innovation	Environment

New GLIMPSE

Government & Policies

Given the variety of background of the respondents, the responses for government and policies covered a wide range of topics from corruption and self-interest to regulatory concerns. Certain food-insecure areas would find that corrupt governments would certainly affect the development to food security for a country. For example, an advisor to the Ministry of Agriculture in Ukraine wrote that an "unstable and poor legislation system" is their number one challenge in agribusiness. Regulation can catch the agriculture industry both through lack of enforcement and excessive jurisdiction. It would stand to reason that the move toward a food-secure world requires both good government support and policy-making.

Food Losses

Originally "L" was focused on losses in the supply chain, but it has become more evident that this should represent a greater spectrum of food loss. This may seem like a small change, but it represents the massive amounts of food loss, often identified as food waste, that occurs at consumption level. Part of the conundrum of food security, particularly in developed nations, is the gross amount of food loss by those that feel food-secure while, others suffer hunger and malnutrition. According to the European commission, about 88 million tonnes of food are wasted annually in the EU. The projected costs of this are about 143 billion euros. Globally, it is estimated that approximately one-third of all food produced is wasted.

Infrastructure & Investments

Here an adjustment was made to the original GLIMPSE to include investments alongside infrastructure under "I." This is because fixed or financial capital is needed for improvements in production. It can also represent the growing concern about what the future of agricultural investments may look like, and any other financial challenges associated with agribusiness – such as food security. Infrastructure is a well-known challenge in food-insecure nations. In fact, professionals from Latin America and Africa cited poor infrastructure as their second biggest challenge. In Africa, for example, getting goods to market can be particularly challenging as only a minority of the population lives within two kilometres of roads that are deemed accessible year-round. Infrastructure can also represent inadequate food availability in urban areas of developed countries as well. The term "food desert" has been coined and represents populations in which 500 people and/or 33 per cent reside more than one mile from a supermarket or large grocery store, and thus lack access

to fresher, healthier, nutritious foods. Their alternative is often quickie marts, where only processed, sugar- or fat-laden foods are available.

Consumer Markets

Originally, "M" represented markets, but it is general knowledge within agribusiness that consumer expectations are changing rapidly and wildly affecting the market, and so an adjustment was made to expand representation to incorporate consumer interactions, preferences, expectations and requirements.

While the information flow between consumers and participants in the food chain is stronger and more public than in the past, it is not generally food-insecure consumers who are making the most noise. This is unfortunate in regard to food security, because many of the approaches that agribusiness is trying to use to improve food availability, such as GMOs, feed additives, clones, etc., have met active resistance from more vocal, food-secure consumers.

People

The biggest difference between the original GLIMPSE and the new one is the addition of the factor "People." It has been added to address the growing concern that agribusiness faces when finding qualified employees or an educated workforce, and illustrates that new and young talent is not attracted to the industry to the degree it once was. This is particularly disconcerting to agribusiness in relation to food security, in that if the next generation is uninterested in agriculture, then it will not advance to the level it needs to in order to accommodate the burgeoning population. Take it a step further and in order to attract people to the industry, it will have to pay more, thus increasing the cost of food production and furthering the gap of food insecurity.

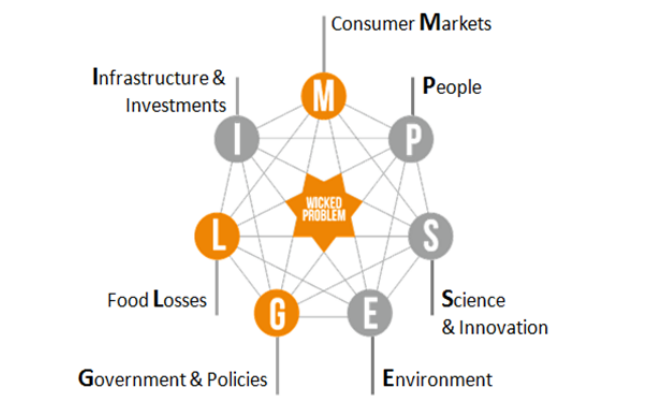
Science & Innovation

Agriculture is perhaps one of the more innovation-resistant sectors. Many aged farmers prefer to stick to the production methods they know, and are either afraid of technology, don't understand it or don't have access to it. Science and innovation, however, is exactly what agribusiness needs to create the technology needed to feed nine billion people and decrease the numbers of food-insecure people. Disease and pest issues are chronic challenges in agriculture and they are only exacerbated by the current practices and globalisation of the food chain. Now more than ever, it is imperative that agribusiness embrace science and innovation and learn to utilise not only the technologies available to them now, but those that are to come in the future.

Environment

Naturally, environment would prevail as one of the biggest challenges facing agribusiness, particularly in relation to food security. Land and water are both primary concerns with agribusiness professionals. Twenty per cent of the respondents listed scarcity of fresh water as the number one challenge and nearly half listed it among the top five. Of course, the irony with land is that where it is needed most, such as highly populated areas, is often the limiting factor of production due to urban sprawl, thus making good infrastructure an asset in a country's agriculture system. Many environmental challenges can be combated with the use of innovation and technology, but again, these have to be adapted by producers in the first place.

GLIMPSE represents an easy acronym for those concerned about the future of food production and food security on our planet. While each on its own is a barrier, there is much to support that they are interlinked and cannot each be tackled on a standalone basis. Combined, GLIMPSE encapsulates the serious and complex issues facing agribusiness in a few key phrases, while helping governments, non-governmental organisations, agencies and even the general public to understand what needs to be done to change the way we will feed nine billion people in the move toward a food secure future.



Aidan Connolly is the chief innovation officer and vice president of corporate accounts at Alltech. He has been with Alltech for more the 25 yers, initially in Ireland and afterward in France, Brazil and the United States. From 2002 to 2008, he held the position of vice president of Europe for Alltech. Having moved from Washington, D.C., Connolly is now based at Alltech's corporate headquarters near Lexington, Kentucky, USA, as Alltech's chief innovation officer and vice president of corporate accounts. Connolly is responsible for the commercialization of Alltech's global research, in addition to corporate account strategy within the company. His expertise is in branding, agriculture and international marketing. Connolly is an adjunct professor of marketing at University College Dublin and China Agricultural University. He is an executive board member of the International Feed Industry Federation, the National Chicken Council and the National Turkey Federation. He is also a former board member of the European Union Association of Specialty Feed Ingredients and their Mixtures and the International Food and Agribusiness Management Association. Connolly is responsible for the highly anticipated Alltech Global Feed Survey, which is released annually. He received a bachelor's degree in commerce from University College Dublin and a master's degree in international marketing from the Michael Smurfit Graduate Business School, University College Dublin.